

**Class: 6**

**Subject: Math**

**Topic: Ratio and proportion**

**No. of Questions: 20**

**Duration: 60 Min**

**Maximum Marks: 60**

1. The length and breadth of a room are 40 m and 20 m, respectively. What is the ratio of the length of the room to the breadth of the room?

- A. 4: 6  
B. 6: 4  
C. 2: 1  
D. 1: 2

Solution: C

Length = 40 m

Breadth = 20 m

$$\text{Ratio} = \frac{\text{Length of room}}{\text{Breadth of room}} = \frac{40}{20} = \frac{2}{1} = 2: 1$$

2. Out of 50 people working in an office, 35 are male. What is the ratio of the number of females to the number of males?

- A. 3: 7  
B. 7: 3  
C. 7: 10  
D. 10: 7

Solution: A

Total number of people = 50

Number of males = 35

$$\therefore \text{Number of females} = \text{Total number of people} - \text{Number of males} = 50 - 35 = 15$$

$$\text{Ratio} = \frac{\text{Number of Females}}{\text{Number of Males}} = \frac{15}{35} = 3: 7$$

3. How can Rs. 80 be divided between Ajay and Vijay in the ratio 1: 3?

- A. Ajay's share = Rs. 60, Vijay's share = Rs. 20  
B. Ajay's share = Rs. 50, Vijay's share = Rs. 30  
C. Ajay's share = Rs. 30, Vijay's share = Rs. 50  
D. Ajay's share = Rs. 20, Vijay's share = Rs. 60

Solution: D

Total amount = Rs. 80

Ratio = 1: 3

Let the amount with Ajay be x.

Amount with Vijay = 80 - x

$$\therefore \frac{1}{3} = \frac{x}{80-x}$$

After cross multiplication, we get

$$1 \times (80 - x) = 3 \times x$$

$$80 - x = 3x$$

$$\Rightarrow 4x = 80$$

$$x = 20$$

$\therefore$  Amount with Ajay = Rs. 20

Amount with Vijay = Rs. 80 - Rs. 20 = Rs. 60

4. Which of the following ratios do not form a proportion?
- A. 25 cm: 1 m and Rs. 40: Rs. 160
  - B. 40 litres: 200 litres and 15 bottles: 75 bottles
  - C. 20 kg: 80 kg and 25 kg: 625 kg
  - D. 200 ml: 25 litres and Rs. 4: Rs. 500

Solution: C

For ratios to be in proportion,

$$\frac{x_1}{y_1} = \frac{x_2}{y_2}$$

Option (1) 25 cm: 1 m and Rs. 40: Rs. 160

L.H.S:

$$\frac{25 \text{ cm}}{1 \text{ m}} = \frac{25 \text{ cm}}{100 \text{ cm}} = \frac{1}{4} \text{ (because 1 m = 100 cm)}$$

R.H.S:

$$\frac{Rs.40}{Rs.160} = \frac{1}{4}$$

L.H.S. = R.H.S.

25 cm: 1 m and Rs. 40: Rs. 160 are in proportion.

Option (2) 40 litres: 200 litres and 15 bottles: 75 bottles

L.H.S:

$$\frac{40 \text{ litres}}{200 \text{ litres}} = \frac{1}{5}$$

R.H.S:

$$\frac{15 \text{ bottles}}{75 \text{ bottles}} = \frac{1}{5}$$

L.H.S. = R.H.S

$$\frac{40 \text{ litres}}{200 \text{ litres}} = \frac{15 \text{ bottles}}{75 \text{ bottles}}$$

40 litres: 200 litres and 15 bottles: 75 bottles are in proportion, i.e.

Option (3)

20 kg: 80 kg and 25 kg: 625 kg

L.H.S:

$$\frac{20 \text{ kg}}{80 \text{ kg}} = \frac{1}{4}$$

R.H.S:

$$\frac{25 \text{ kg}}{625 \text{ kg}} = \frac{1}{25}$$

L.H.S.  $\neq$  R.H.S.

$$\frac{20 \text{ kg}}{80 \text{ kg}} \neq \frac{25 \text{ kg}}{625 \text{ kg}}$$

20 kg: 80 kg and 25 kg: 625 kg are not in proportion, i.e.

Option (4) 200 ml: 25 litres and Rs.4: Rs.500

L.H.S:

$$\frac{200 \text{ ml}}{25000 \text{ ml}} = \frac{1}{125} \quad (\text{because } 1 \text{ litre} = 1000 \text{ ml. So, } 25 \text{ litres} = 25000 \text{ ml})$$

R.H.S:

$$\frac{Rs.4}{Rs.500} = \frac{1}{125}$$

L.H.S. = R.H.S. 200 ml: 25 litres and Rs. 4: Rs. 500 are in proportion. Therefore, option (3) does not make any proportion.

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5. What does 3: 10: 15: 50 mean?

- A.  $\frac{10}{15} = \frac{50}{3}$   
B.  $\frac{10}{15} = \frac{3}{50}$   
C.  $\frac{3}{10} = \frac{50}{15}$   
D.  $\frac{3}{10} = \frac{15}{50}$

Solution: D

3:10::15: 50 means that 3, 10, 15, 50 are in proportion.

That is:  $\frac{3}{10} = \frac{15}{50}$

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6. Rohit travelled a distance of 13 km in an hour. What is the distance travelled by him in 13 hours if he travels at the same speed?

- A. 149 km  
B. 159 km  
C. 169 km  
D. 196 km

Solution: C

Distance travelled in 1 hour = 13 km

Distance travelled in 13 hours =  $13 \times 13$  km = 169 km

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7. A car travels 90 km in  $2\frac{1}{2}$  hours. What is the total distance travelled by the car in 2 hours with the same speed?

- A. 80 km  
B. 85 km  
C. 72 km  
D. 68 km

Solution: C

Distance of 90 km is travelled in  $= 2\frac{1}{2}$  hours  $= \frac{5}{2}$  hours

In 1 hour, distance travelled  $= \frac{90 \times 2}{5}$  km

In 2 hours, distance travelled  $= \frac{90}{5} \times 2 \times 2$  km  
 $= 72$  km

8. Which of the following statements is/are true about the comparison of quantities by ratio?

(I) In a ratio, the two quantities cannot be of different units.

(II) If the two quantities being compared are of the same unit, the ratio cannot be calculated.

- A. Both (I) and (II)  
 B. Neither (I) nor (II)  
 C. Only (I)  
 D. Only (II)

Solution: C

(I) when the two quantities are of different units, they cannot be compared.

(II) If the two quantities are of the same unit, ratio cannot be calculated. **(False)**

We can always calculate the ratio of two quantities if they have the same unit or both have no units at all.

Example: We can calculate the ratio of Rs. 20 to Rs. 48

$$\text{Ratio} = \frac{20}{48} = \frac{5}{12} = 5:12$$

9. How can Rs. 1000 be divided between two partners in the ratio 3: 2?

- A. The I<sup>st</sup> partner gets Rs. 500 and the II<sup>nd</sup> partner gets Rs. 500.  
 B. The I<sup>st</sup> partner gets Rs. 400 and the II<sup>nd</sup> partner gets Rs. 600.  
 C. The I<sup>st</sup> partner gets Rs. 700 and the II<sup>nd</sup> partner gets Rs. 300.  
 D. The I<sup>st</sup> partner gets Rs. 600 and the II<sup>nd</sup> partner gets Rs. 400.

Solution: D

Total amount = Rs. 1000

Ratio is 3: 2.

Total =  $3x + 2x$

$1000 = 3x + 2x$

$5x = 1000$

$x = 200$

Amount with the first partner =  $3 \times 200 = \text{Rs. } 600$

Amount with the second partner =  $2 \times 200 = \text{Rs. } 400$

10. Karan travelled 8 km in 2 hours and Kavi travelled 6 km in  $1\frac{1}{2}$  hours. What will be the distances travelled by Karan and Kavi, respectively, with the same speed in 3 hours?
- A. 12 km and 27 km  
 B. 24 km and 12 km  
 C. 24 km and 27 km  
 D. 12 km and 12 km

Solution: D

Distance travelled by Karan in 2 hours = 8 km

Distance travelled by Karan in 1 hour =  $\frac{8}{2}$  km = 4 km

Distance travelled by Karan in 3 hours =  $4 \times 3$  km = 12 km

Distance travelled by Kavi in  $\frac{3}{2}$  hours = 6 km

Distance travelled by Kavi in 1 hour =  $\frac{6}{3/2} = \frac{12}{3} = 4$  km

Distance travelled by Kavi in 3 hours =  $4 \times 3 = 12$  km

11. What is the ratio of 30 minutes to 1.5 hours?

- A. 3: 1  
 B. 1: 3  
 C. 2: 1  
 D. 1: 2

Solution: B

We know

1 hour = 60 minutes

$\therefore$  1.5 hours = 60 minutes + 30 minutes

= 90 minutes

Ratio =  $\frac{30}{90} = \frac{1}{3} = 1: 3$

12. Ram purchased 11 pens for Rs. 231 and Shyam purchased 7 pens for Rs. 140. Who among them bought the pens at a cheaper rate and by how much?

- A. Ram; Rs. 2 each  
 B. Shyam; Rs. 2 each  
 C. Ram; Re. 1 each

D. Shyam; Re. 1 each

Solution: D

Number of pens bought by Ram = 11

Amount spent on 11 pens by Ram = Rs. 231

$$\text{Price of 1 pen} = \text{Rs. } \frac{231}{11}$$

$$= \text{Rs. } 21$$

Number of pens bought by Shyam = 7

$$\text{Amount spent on 7 pens by Shyam} = \text{Rs. } \frac{140}{7} = \text{Rs. } 20$$

Therefore, Shyam bought the pens cheaper by Re. 1.

13. Which of the following options forms a proportion with the ratio 32: 64?

A. 3: 9

B. 6: 9

C. 3: 12

D. 6: 12

Solution: D

32: 64

$$\frac{32}{64} = \frac{1}{2} = 1:2$$

6: 12 forms a proportion with 32: 64.

$$\text{Because } \frac{6}{12} = \frac{1}{2} = 1:2$$

14. The weight of 56 books is 28 kg. What is the weight of 30 such books?

A. 5 kg

B. 10 kg

C. 15 kg

D. 30 kg

Solution: C

Weight of 56 books = 28 kg

Weight of 1 book = 0.5 kg

Weight of 30 such books = 15 kg

15. What is the ratio of 30 cm to 15 m?

A. 1: 20

B. 2: 10

C. 1: 50

D. 5: 10

Solution: C

We know that

$$1 \text{ m} = 100 \text{ cm}$$

$$15 \text{ m} = 1500 \text{ cm}$$

$$\text{Ratio} = 1 : 50$$

16. The values of x and y in the box are  $\frac{15}{18} = \frac{x}{6} = \frac{10}{y}$

A. 5,12

B. 12,5

C. 5,10

D. 10,5

Solution: A

Just go by proportion 1 by 1

17. In the word MATHEMATICS, the ratio of number of consonants to the number of vowels.

A. 4:7

B. 7:4

C. 5:6

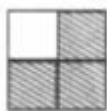
D. 6:5

Solution: B

Consonants: MTHMTCS - 7

Vowels: AEAI- 4

18. Shaded portion represents in the given square is



A. 50%

B. 30%

C. 75%

D. 100%

Solution: C

Three of four shades  $= \frac{3}{4} \times 100 = 3 \times 25 = 75\%$

19. Ratio is a method of comparing two quantities by

A. Addition

B. Subtraction

C. Division

D. Multiplication

Solution: C



20. The antecedent and consequent of a ratio..... interchanged unless there is a change in the given statements.

A. Can be

B. Cannot be

C. Sometimes

D. None of these

Solution = B

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